

제 09 장

데이터베이스와 **MySQL**

2020년도 1학기



❖ 데이터

- 단순한 사실에 불과한 아직 처리되지 않은 값

❖ 정보

- 데이터가 사람에게 유용한 의미로 쓰여질 수 있도록 처리

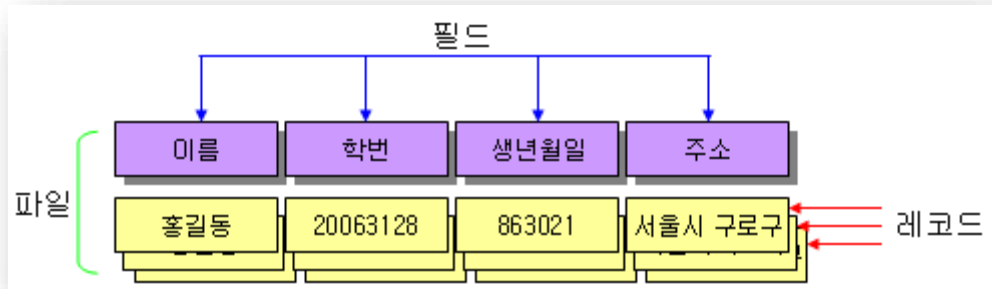
❖ 데이터베이스

- 관련 있는 데이터의 저장소

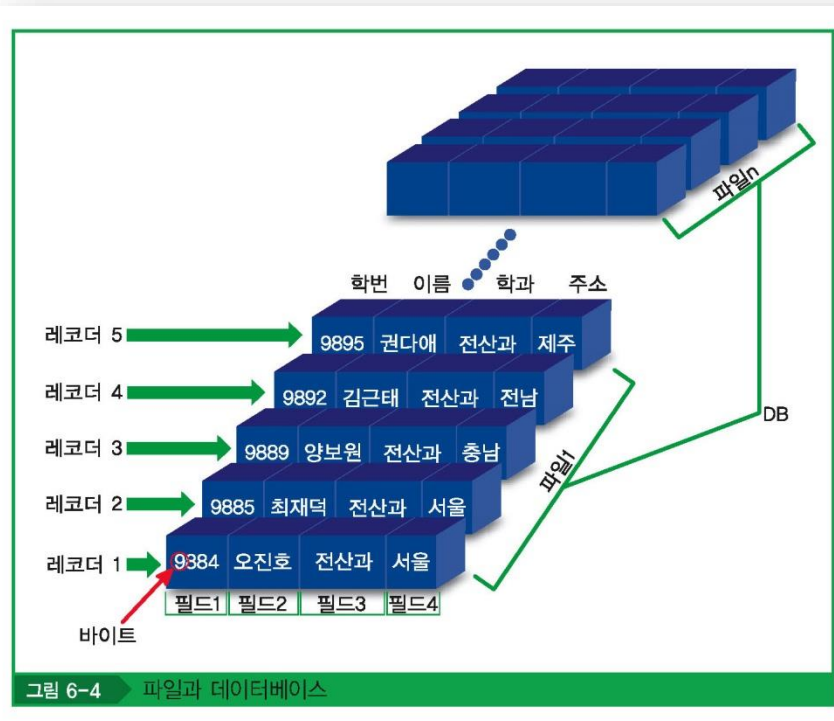
❖ DBMS

- 사용자가 데이터베이스를 만들고, 유지 관리할 수 있도록 돕는 프로그램

❖ 필드와 레코드



❖ 파일과 데이터베이스



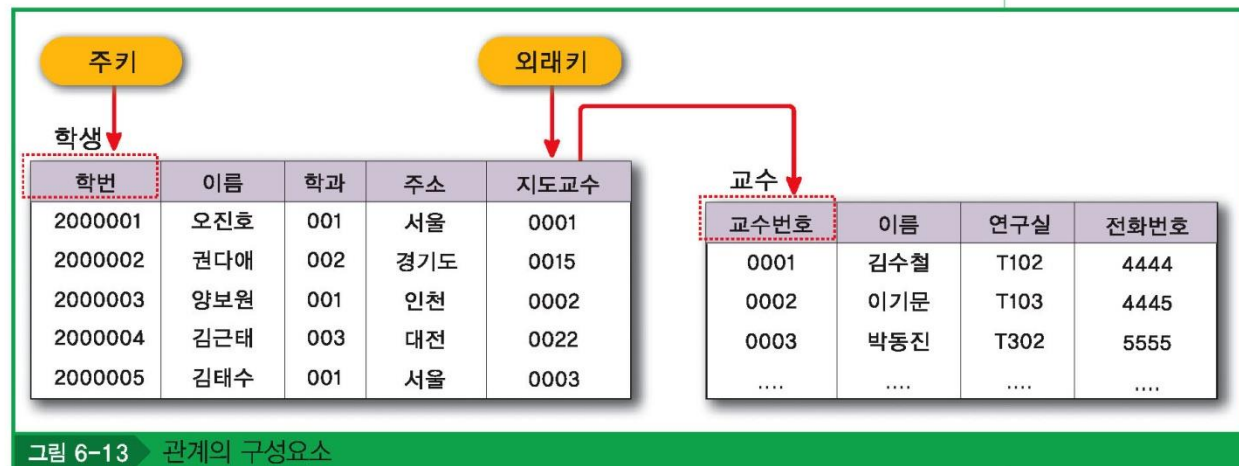
❖ 관계형 모델

- 데이터를 행과 열로 구성된 이차원 테이블의 집합으로 표현한 모델

❖ 테이블

❖ 행과 열

❖ 키







❖ SQL(Structured Query Language)

- DBMS에서 사용되는 언어로, 데이터베이스를 구축하고
- 새로운 자료를 입력하거나, 데이터를 수정, 또는 삭제, 검색하는데 이용되는 가장 기본적인 언어

SQL 구분	SQL 종류	예문	의미
DDL	create database	create database univdb;	데이터베이스를 생성
	drop database	drop database testdb;	데이터베이스를 제거
	create table	create table professor (id varchar(10) NOT NULL, name varchar(20) NULL);	테이블을 생성
	drop table	drop table professor;	테이블을 제거
	alter table	alter table student rename stud;	테이블의 구조를 수정
DML	select	select * from student;	테이블의 행을 검색
	insert	insert into professor values ("lg", "");	테이블에 한 행을 삽입
	update	update student set depart='컴퓨터공학과' where depart = '전산학과' ;	테이블 내용을 수정
	delete	delete from student;	테이블의 행을 삭제



- ❖ create
- ❖ drop
- ❖ alter
- ❖ insert
- ❖ select
- ❖ delete
- ❖ update
- ❖ use
- ❖ show
- ❖ desc

MySQL 개요와 설치

❖ www.mysql.com

- 원래 mSQL이라는 DBMS에서 기반이 되어 새로 개발된 DBMS로서 범용적으로 많이 이용하는 데이터베이스 관리 시스템

❖ MySQL community Server 내려받기

❖ MySQL JDBC 드라이버 내려 받기

❖ MySQL 설치

The screenshot shows the MySQL website homepage. At the top, there's a navigation bar with links like Home, Products, Services, Customers, Why MySQL?, News & Events, About, and How to Buy. Below this, there's a 'GET STARTED' section with links to MySQL Enterprise 30-day Trial, MySQL Enterprise Unlimited, MySQL Training, Free Web Seminars, Success Stories, and Contact MySQL. A large banner in the center reads 'MySQL Enables Enterprise 2.0' with a 'Learn More >>' button. Below the banner is a grid of four columns: DISCOVER, TEST DRIVE, LEARN, and WHAT'S NEW. The DISCOVER column lists links like OEM/ISV Corner, CIO Corner, White Papers, TCO Calculator, DBA Calculator, and more. The TEST DRIVE column features a 'MySQL Enterprise 30-day Trial Offer' with a 'Learn more' button. The LEARN column lists 'MySQL Consulting' and 'MySQL Training' with various dates and locations. The WHAT'S NEW column lists 'News & Events' with links to Sun introducing MySQL Workbench, Sun Microsystems announcing MySQL 5.1, and Sun-MySQL World Tour. On the right side of the page, there's a quote: 'The platforms powering the Web today are the enterprise infrastructure of tomorrow. What we learn from those platforms is the enormous power of open source, open standards, and user involvement... and one more thing -- that the future belongs to data. Every killer app on the Internet is a database.'



MySQL Community Downloads

Login Now or Sign Up for a free account.

An Oracle Web Account provides you with the following advantages:

- Fast access to MySQL software downloads
- Download technical White Papers and Presentations
- Post messages in the MySQL Discussion Forums
- Report and track bugs in the MySQL bug system

Login »

using my Oracle Web account

Sign Up »

for an Oracle Web account

MySQL.com is using Oracle SSO for authentication. If you already have an Oracle Web account, click the Login link. Otherwise, you can sign up for a free account by clicking the Sign Up link and following the instructions.

MySQL Installer - Community



Please wait while Windows configures MySQL Installer - Community

Cancel

No thanks, just start my download.



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MySQL Installer

Adding Community

Choosing a Setup Type

Installation

Installation Complete

Choosing a Setup Type

Please select the Setup Type that suits your use case.

- ☒ **Developer Default**
Installs all products needed for MySQL development purposes.
- ☐ **Server only**
Installs only the MySQL Server product.
- ☐ **Client only**
Installs only the MySQL Client products, without a server.
- ☐ **Full**
Installs all included MySQL products and features.
- ☐ **Custom**
Manually select the products that should be installed on the system.

Setup Type Description

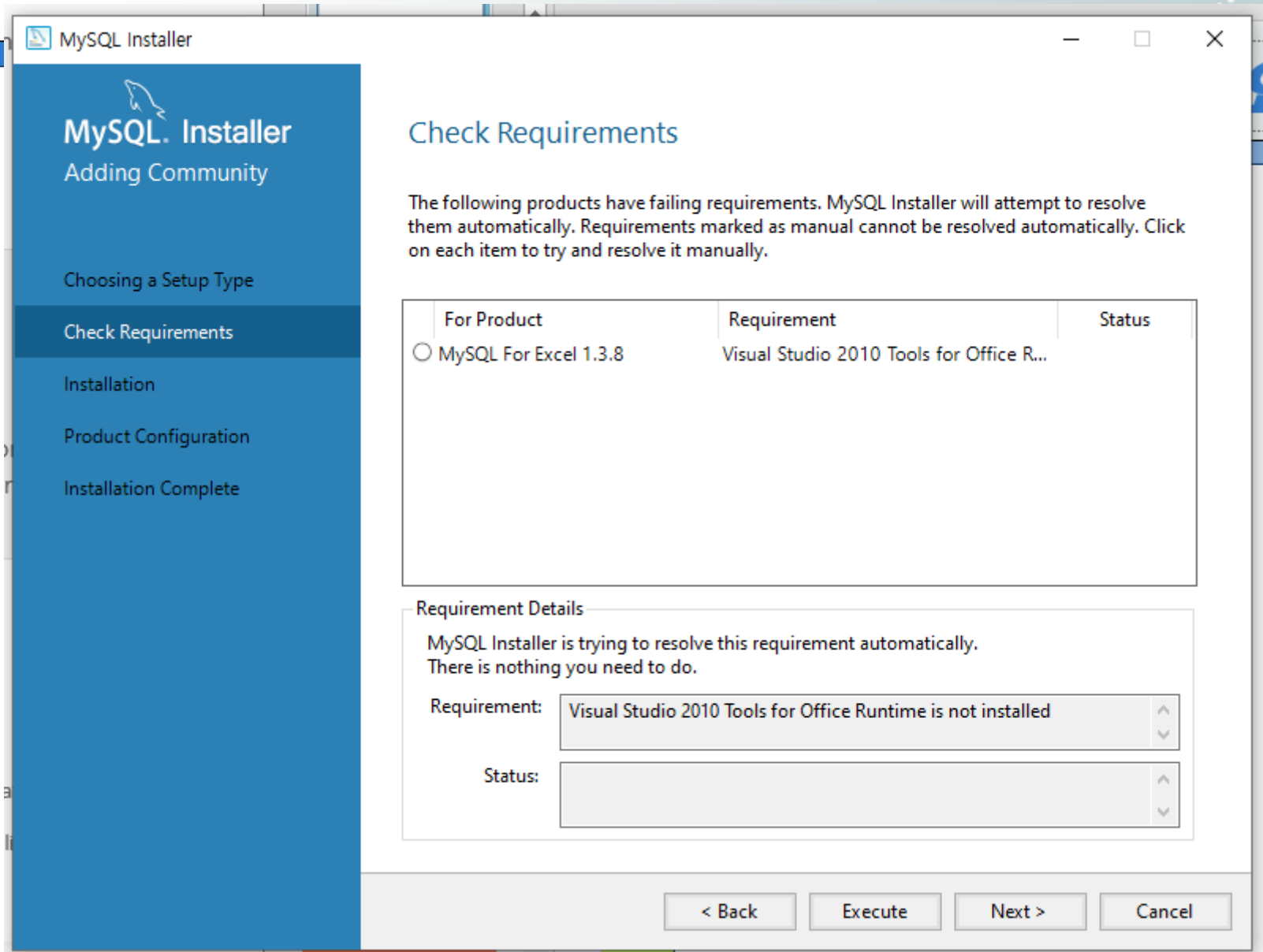
Installs the MySQL Server and the tools required for MySQL application development. This is useful if you intend to develop applications for an existing server.

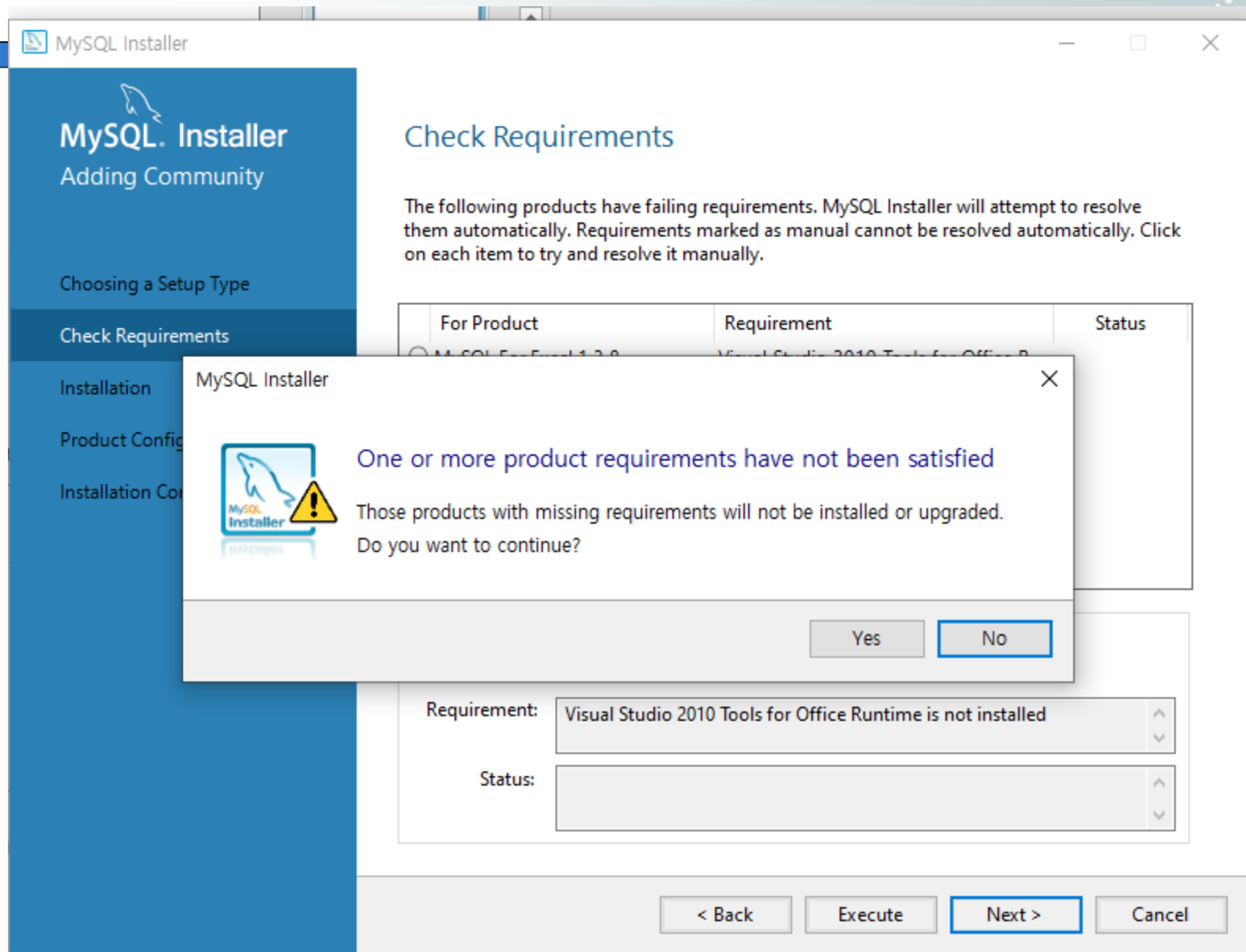
This Setup Type includes:

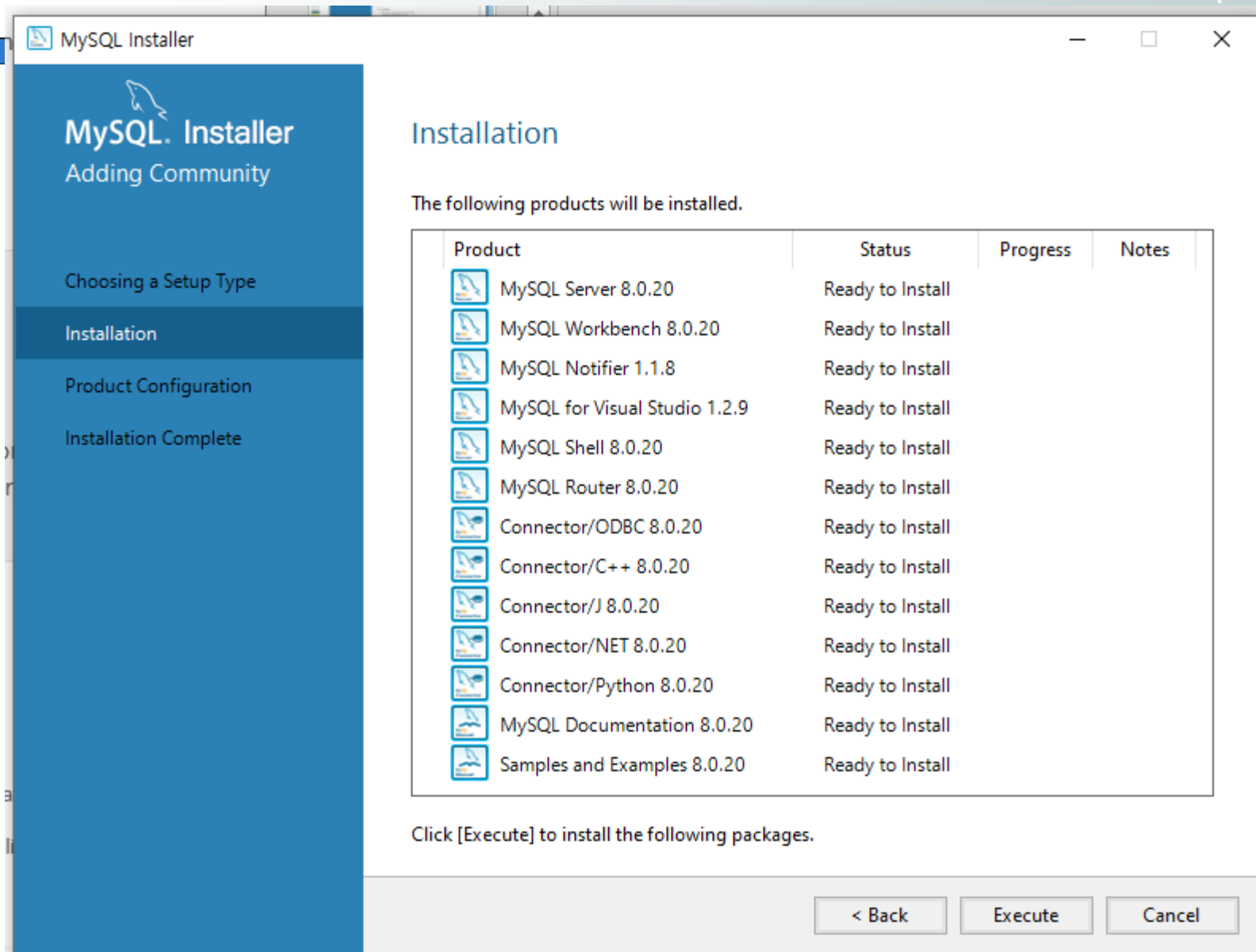
- * MySQL Server
- * MySQL Shell
The new MySQL client application to manage MySQL Servers and InnoDB cluster instances.
- * MySQL Router
High availability router daemon for InnoDB cluster setups to be installed on application

Next >

Cancel







MySQL Installer

Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Installation

The following products will be installed.

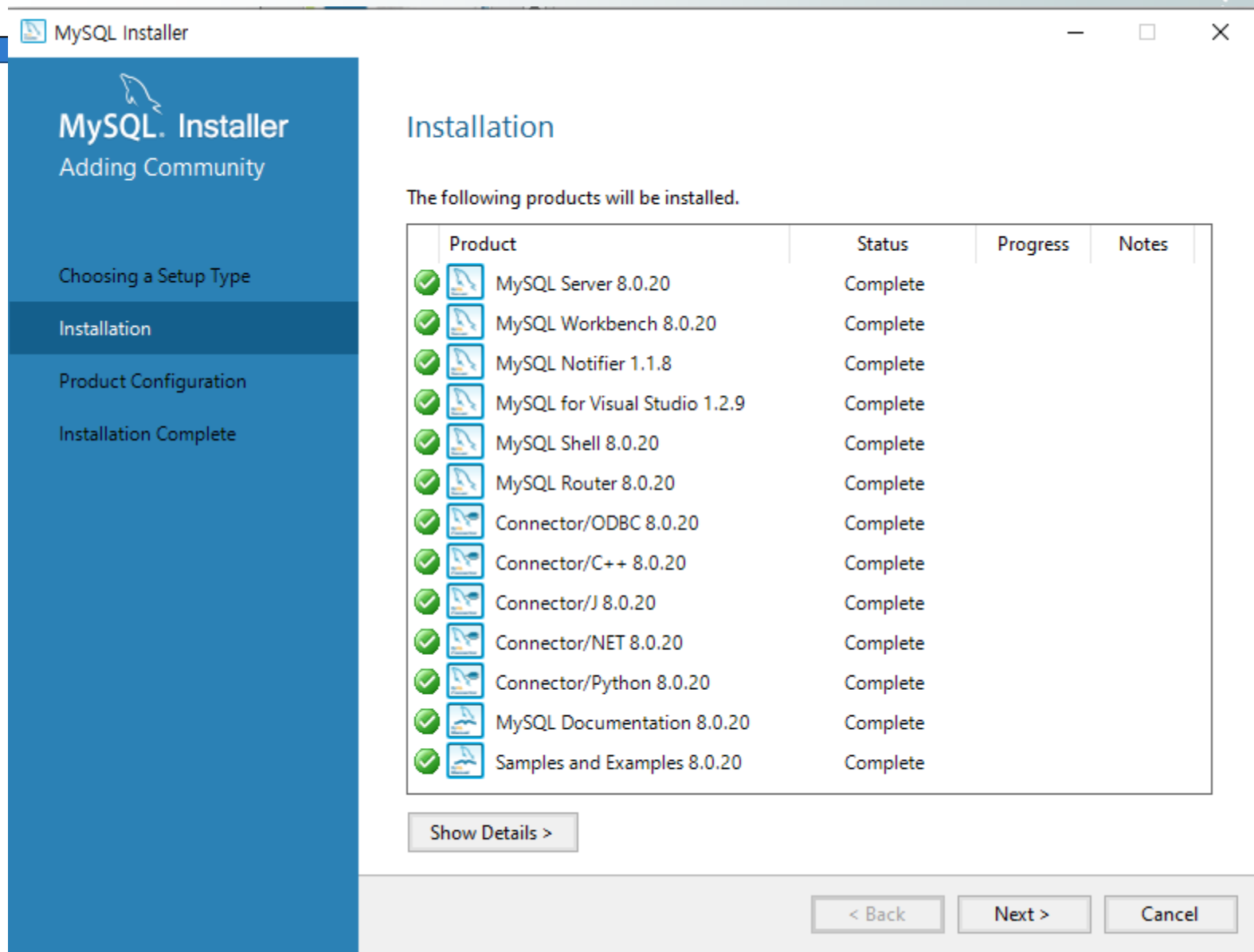
	Product	Status	Progress	Notes
✓	MySQL Server 8.0.20	Complete		
✓	MySQL Workbench 8.0.20	Complete		
✓	MySQL Notifier 1.1.8	Complete		
✓	MySQL for Visual Studio 1.2.9	Complete		
✎	MySQL Shell 8.0.20	Installing	24%	
	MySQL Router 8.0.20	Ready to Install		
	Connector/ODBC 8.0.20	Ready to Install		
	Connector/C++ 8.0.20	Ready to Install		
	Connector/J 8.0.20	Ready to Install		
	Connector/NET 8.0.20	Ready to Install		
	Connector/Python 8.0.20	Ready to Install		
	MySQL Documentation 8.0.20	Ready to Install		
	Samples and Examples 8.0.20	Ready to Install		

Show Details >

< Back

Execute

Cancel



MySQL. Installer

Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Product Configuration

We'll now walk through a configuration wizard for each of the following products.

You can cancel at any point if you wish to leave this wizard without configuring all the products.

Product	Status
MySQL Server 8.0.20	Ready to configure
MySQL Router 8.0.20	Ready to configure
Samples and Examples 8.0.20	Ready to configure

Next >

Cancel

MySQL. Installer

MySQL Server 8.0.20

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Logging Options

Advanced Options

Apply Configuration

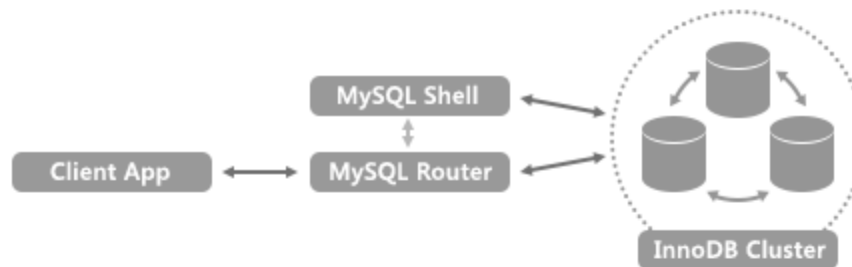
High Availability

☒ Standalone MySQL Server / Classic MySQL Replication

Choose this option to run the MySQL instance as a standalone database server with the opportunity to configure classic replication later. With this option, you can provide your own high-availability solution, if required.

☐ InnoDB Cluster

The InnoDB cluster technology provides an out-of-the-box high availability (HA) solution for MySQL using Group Replication.



Note: [InnoDB cluster](#) requires a minimum of three MySQL server instances to provide a fully automated HA solution. Members of a cluster should be located such that network communication latency between servers is low.

[Next >](#)

Cancel

MySQL Installer

MySQL Server 8.0.20

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Type and Networking

Server Configuration Type

Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.

Config Type: Development Computer

Connectivity

Use the following controls to select how you would like to connect to this server.

☒ TCP/IP

Port: 3306



X Protocol Port: 33060

☒ Open Windows Firewall ports for network access☐ Named Pipe

Pipe Name: MYSQL

☐ Shared Memory

Memory Name: MYSQL

Advanced Configuration

Select the check box below to get additional configuration pages where you can set advanced and logging options for this server instance.

☐ Show Advanced and Logging Options

< Back

Next >

Cancel

MySQL Installer

MySQL Server 8.0.20

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Type and Networking

Server Configuration Type

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☐ Shared Memory

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☐ Show Advanced and Logging Options

< Back

Next >

Cancel

MySQL[®] Installer

MySQL Server 8.0.20

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Authentication Method

☒ Use Strong Password Encryption for Authentication (RECOMMENDED)

MySQL 8 supports a new authentication based on improved stronger SHA256-based password methods. It is recommended that all new MySQL Server installations use this method going forward.



Attention: This new authentication plugin on the server side requires new versions of connectors and clients which add support for this new 8.0 default authentication (caching_sha2_password authentication).

Currently MySQL 8.0 Connectors and community drivers which use libmysqlclient 8.0 support this new method. If clients and applications cannot be updated to support this new authentication method, the MySQL 8.0 Server can be configured to use the legacy MySQL Authentication Method below.

☐ Use Legacy Authentication Method (Retain MySQL 5.x Compatibility)

Using the old MySQL 5.x legacy authentication method should only be considered in the following cases:

- If applications cannot be updated to use MySQL 8 enabled Connectors and drivers.
- For cases where re-compilation of an existing application is not feasible.
- An updated, language specific connector or driver is not yet available.

Security Guidance: When possible, we highly recommend taking needed steps towards upgrading your applications, libraries, and database servers to the new stronger authentication. This new method will significantly improve your security.

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Next >

Cancel

MySQL Installer

MySQL Server 8.0.20

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Accounts and Roles

Root Account Password

Enter the password for the root account. Please remember to store this password in a secure place.

MySQL Root Password:

●●●●●●●●

Repeat Password:

●●●●●●●●

Password strength: **Weak**

MySQL User Accounts

Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.

MySQL User Name	Host	User Role

Add User

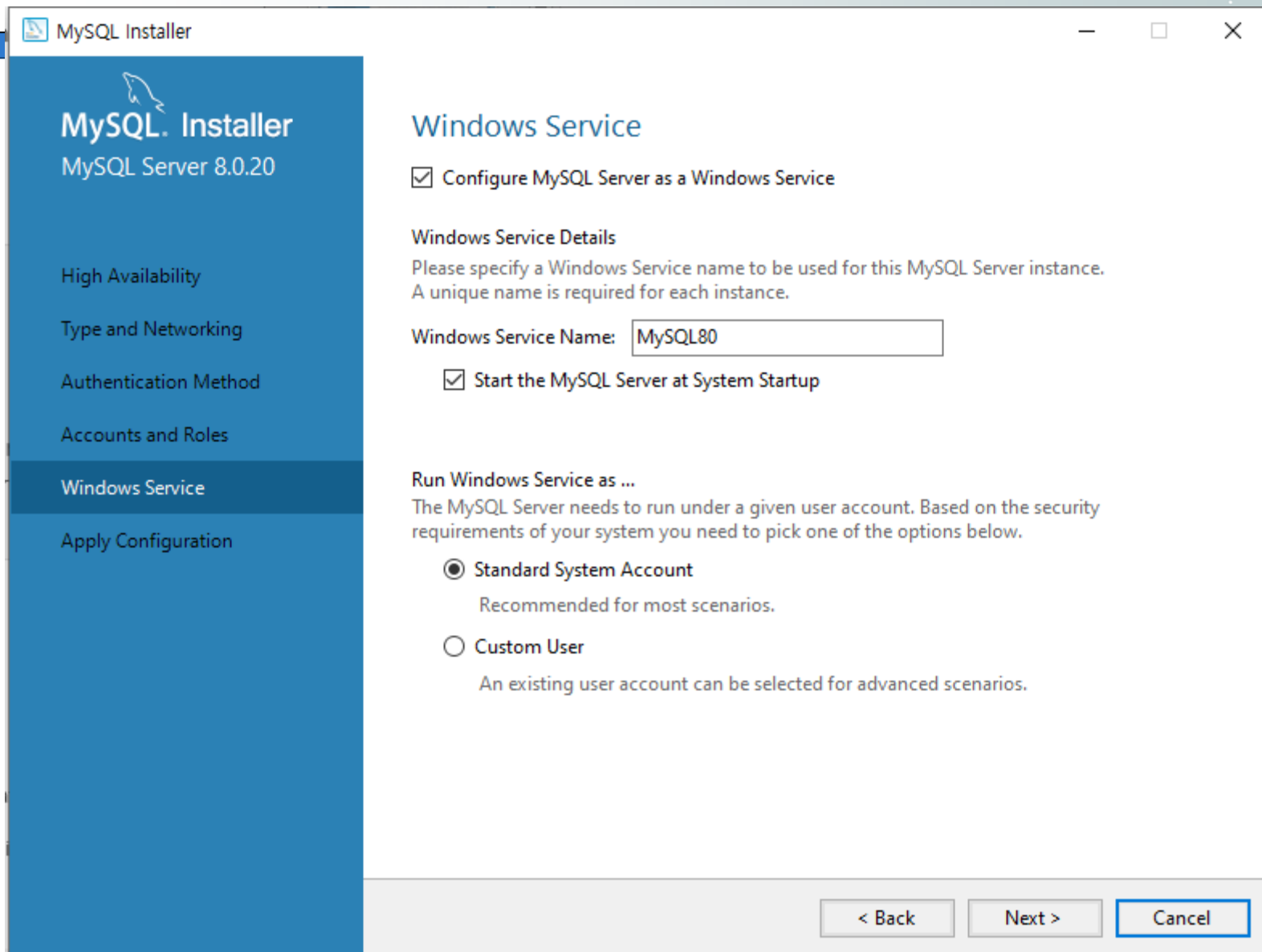
Edit User

Delete

< Back

Next >

Cancel



MySQL Installer

MySQL Server 8.0.20

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Apply Configuration

Click [Execute] to apply the changes

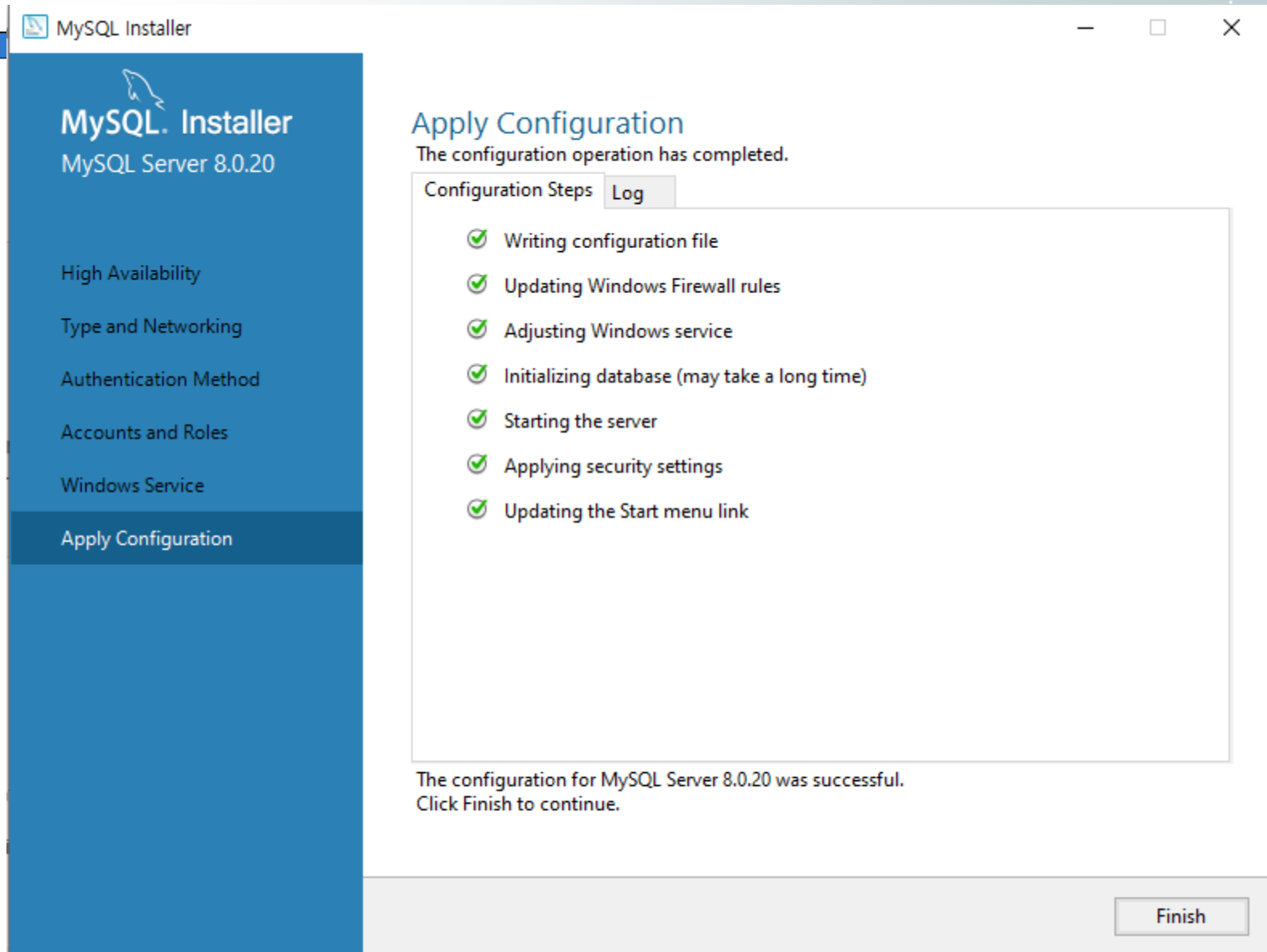
Configuration Steps Log

- ☐ Writing configuration file
- ☐ Updating Windows Firewall rules
- ☐ Adjusting Windows service
- ☐ Initializing database (may take a long time)
- ☐ Starting the server
- ☐ Applying security settings
- ☐ Updating the Start menu link

< Back

Execute

Cancel



MySQL Installer

Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Product Configuration

We'll now walk through a configuration wizard for each of the following products.

You can cancel at any point if you wish to leave this wizard without configuring all the products.

Product	Status
MySQL Server 8.0.20	Configuration complete.
MySQL Router 8.0.20	Ready to configure
Samples and Examples 8.0.20	Ready to configure

Next >

Cancel

MySQL Installer

MySQL Router 8.0.20

MySQL Router Configuration

MySQL Router Configuration

☐ Bootstrap MySQL Router for use with InnoDB cluster

This wizard can bootstrap MySQL Router to direct traffic between MySQL applications and a MySQL InnoDB cluster. Applications that connect to the router will be automatically directed to an available read/write or read-only member of the cluster.

The bootstrapping process requires a connection to the InnoDB cluster. In order to register the MySQL Router for monitoring, use the current Read/Write instance of the cluster.

Hostname:

Port:

Management User:

Password:

MySQL Router requires specification of a base port (between 80 and 65532). The first port is used for classic read/write connections. The other ports are computed sequentially after the first port. If any port is indicated to be in use, please change the base port.

Classic MySQL protocol connections to InnoDB cluster:

Read/Write:

Read Only:

MySQL X protocol connections to InnoDB cluster:

Read/Write:

Read Only:

MySQL Installer

Samples and Examples

Connect To Server

Apply Configuration

Connect To Server

Select the MySQL server instances from the list to receive sample schemas and data.

☐ Show MySQL Server instances that may be running in read-only mode

	Server	Port	Arch...	Type	Status
<input checked="" type="checkbox"/>	MySQL Server 8.0.20	3306	X64	Stand-alone Server	Connection succeeded.

Provide the credentials that should be used (requires root privileges).
Click "Check" to ensure they work.

User name:

Credentials provided in Server configuration

Password:



MySQL. Installer

Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Installation Complete

The installation procedure has been completed.

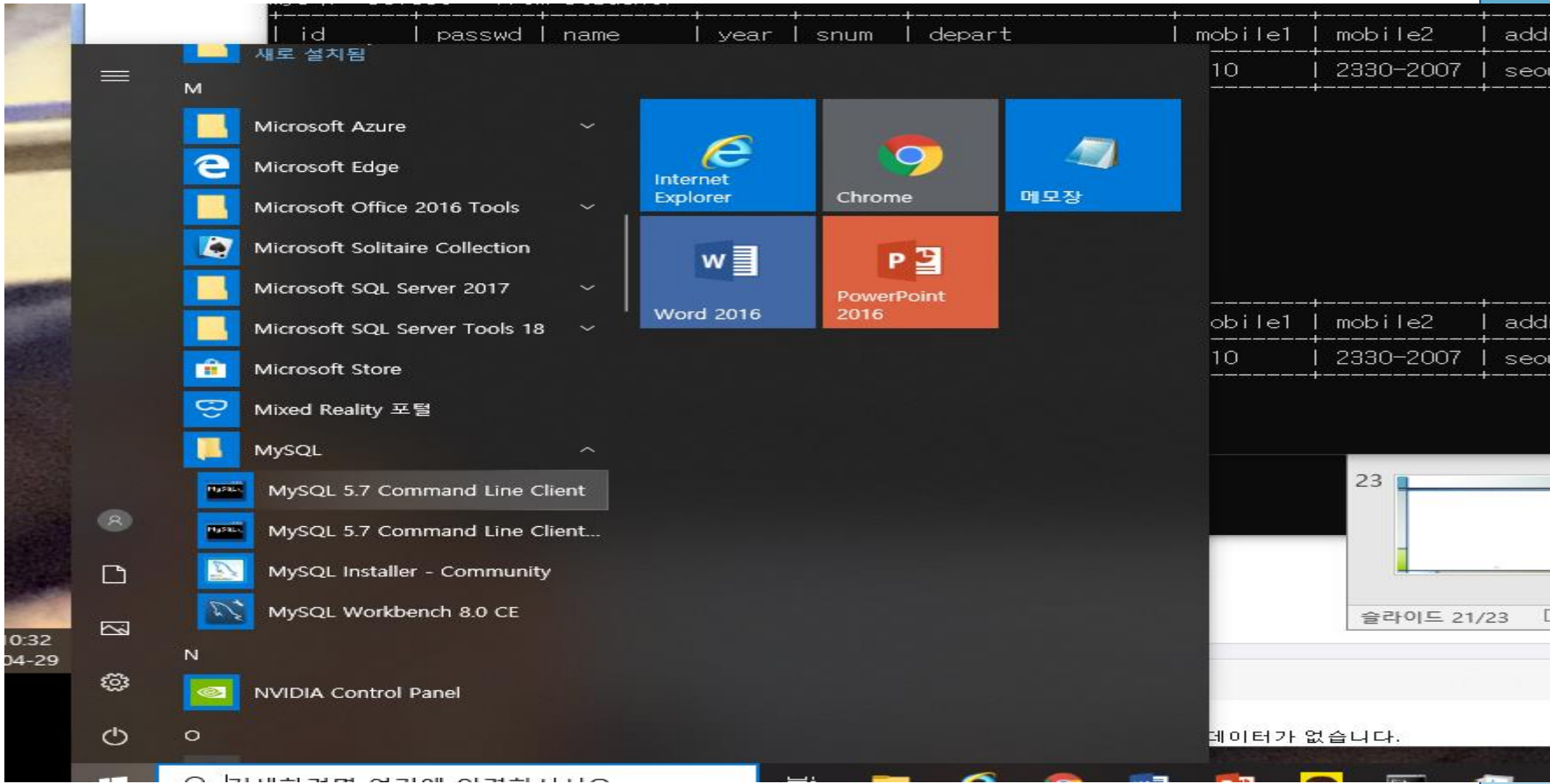
[Copy Log to Clipboard](#)

- ☒ Start MySQL Workbench after Setup
- ☒ Start MySQL Shell after Setup

Finish



- ❖ 실제 CLI window view에서 수행하는 내용 몇가지 해봅시다!
- ❖ 예전에 해봤었던 기억이 떠오르도록!





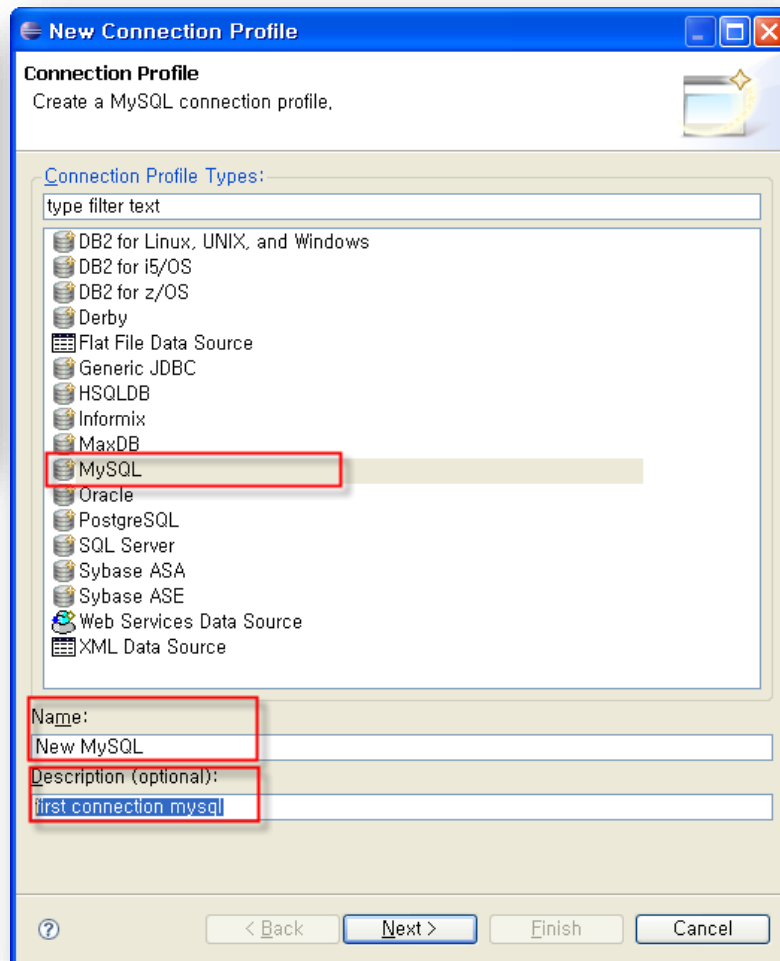
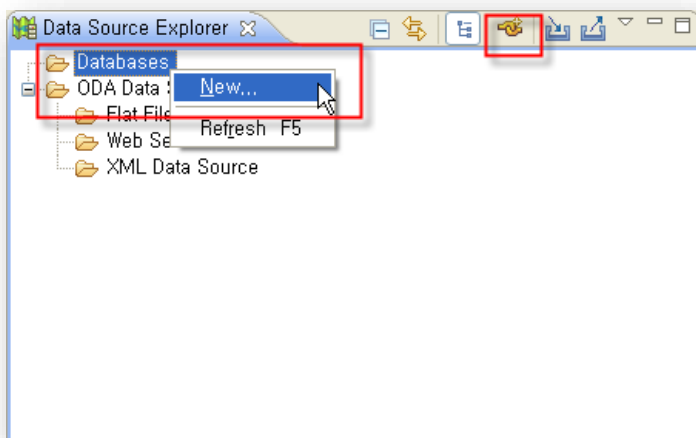
❖ MySQL JDBC 드라이버(Java Database Connectivity) 압축 파일

- [mysql-connector-java-5.1.6.zip]

❖ 드라이버 파일

- [mysql-connector-java-5.1.6-bin.jar]
- 다음 폴더 중 하나에 복사
 - [Tomcat 설치 폴더]/[lib]
 - [jdk 설치폴더]/[jre]/[lib]/[ext]

❖ [Data Source Explorer] 뷰를 이용



커백션 프로파일 만들기(2)

❖ [New Connection Profile]

New Connection Profile

Specify a Driver and Connection Details
Select a driver from the drop-down and provide login details for the connection.

Drivers: MySQL JDBC Driver

Properties
General Optional

Database: mysql database
URL: jdbc:mysql://localhost:3306/mysql
User name: root
Password:
☐ Save password

☒ Connect when the wizard completes
☐ Connect every time the workbench is started

Test Connection

< Back Next > Finish Cancel

New Driver Definition

Specify a Driver Template and Definition Name
A driver already exists with that name, Please provide a unique driver name.

Name/Type Jar List Properties

Driver files:
C:\java\jdk1.6.0\src\lib\ext\mysql-connector-java-5.1.6-bin.jar

Add JAR/Zip...
Edit JAR/Zip...
Remove JAR/Zip
Clear All

Cancel

Select the file:

찾는 위치(I): ext

내 최근 문서
바탕 화면
내 문서
내 컴퓨터
내 네트워크 환경

dnsns.jar
localedata.jar
meta-index
mysql-connector-java-5.0.4-bin.jar
mysql-connector-java-5.1.6-bin.jar
sunice_provider.jar
sunmscapi.jar
sunpkcs11.jar

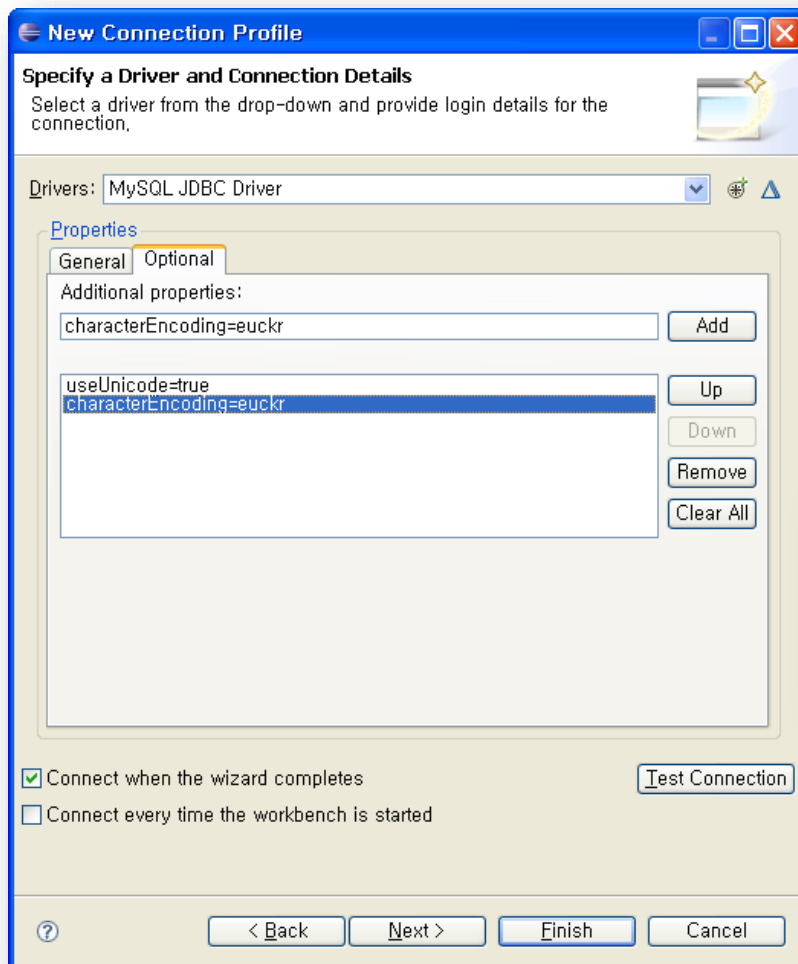
파일 이름(N): mysql-connector-java-5.1.6-bin.jar
파일 형식(I): *.*

열기(O)
취소

커백션 프로파일 만들기(3)

❖ 속성 [Optional]

- [useUnicode=true]와 [characterEncoding=euckr]을 입력



New Connection Profile

Specify a Driver and Connection Details
Select a driver from the drop-down and provide login details for the connection.

Drivers: MySQL JDBC Driver

Properties

General Optional

Additional properties:

characterEncoding=euckr Add

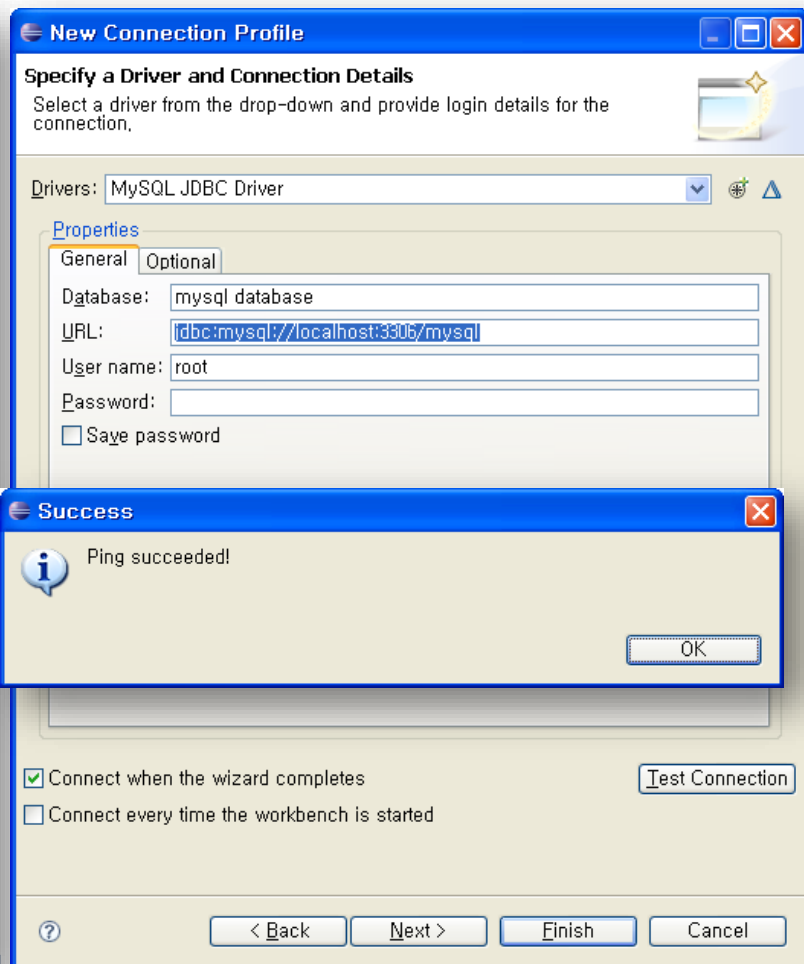
useUnicode=true Up

characterEncoding=euckr Down Remove Clear All

☒ Connect when the wizard completes Test Connection

☐ Connect every time the workbench is started

< Back Next > Finish Cancel



New Connection Profile

Specify a Driver and Connection Details
Select a driver from the drop-down and provide login details for the connection.

Drivers: MySQL JDBC Driver

Properties

General Optional

Database: mysql database

URL: jdbc:mysql://localhost:3306/mysql

User name: root

Password:

☐ Save password

Success

Ping succeeded!

OK

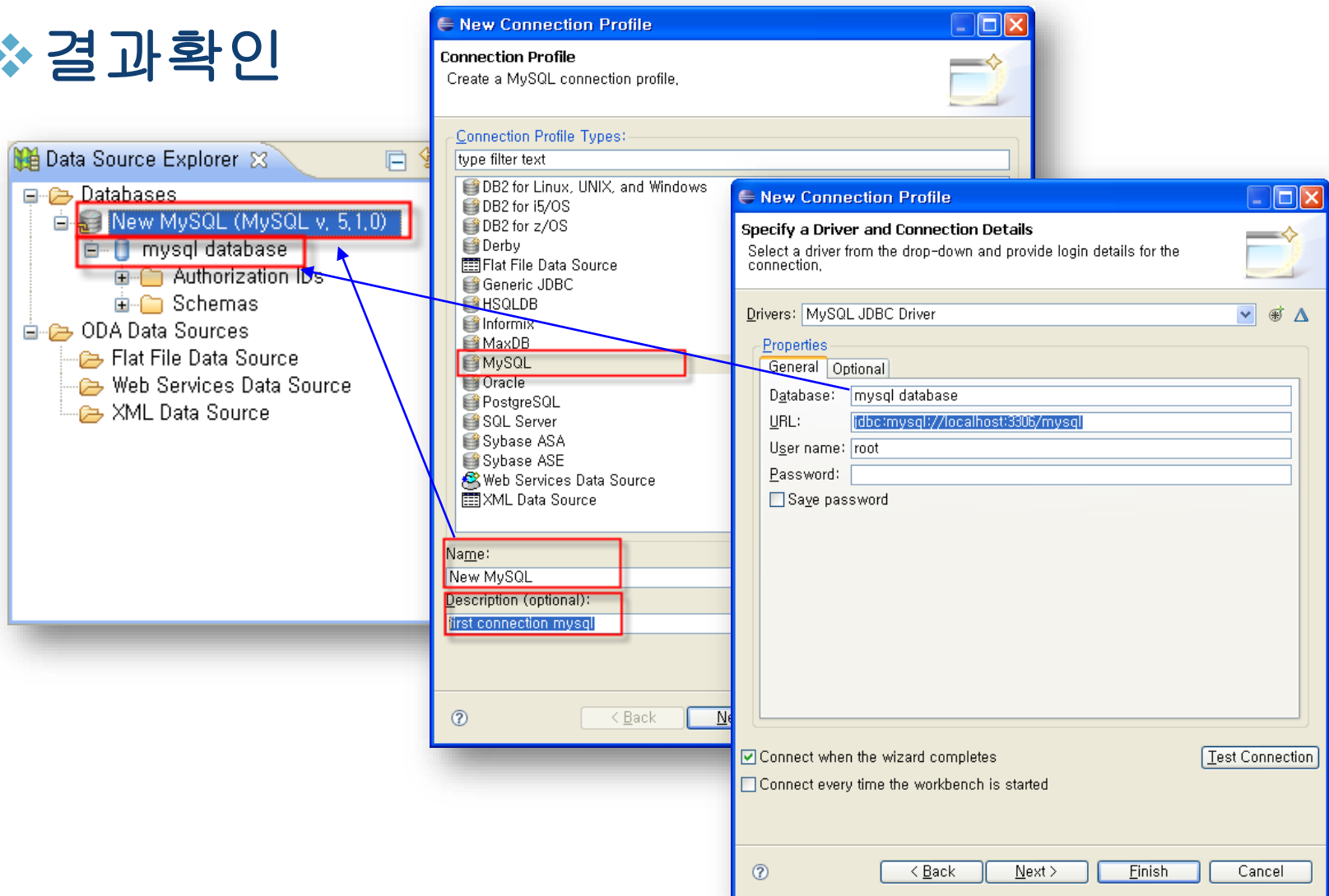
☒ Connect when the wizard completes Test Connection

☐ Connect every time the workbench is started

< Back Next > Finish Cancel

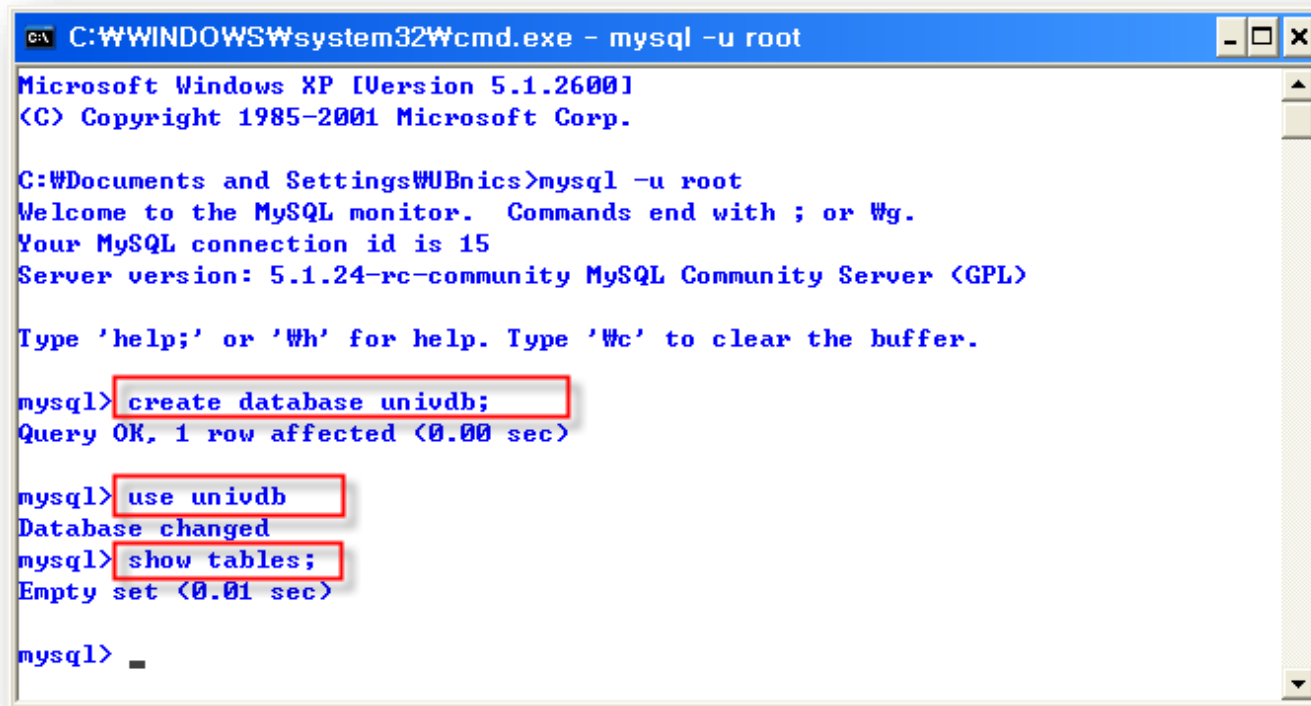
커백션 프로파일 만들기(4)

❖ 결과확인





❖ create database univdb;



```
C:\WINDOWS\system32\cmd.exe - mysql -u root
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\WUBnics>mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 15
Server version: 5.1.24-rc-community MySQL Community Server (GPL)

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> create database univdb;
Query OK, 1 row affected (0.00 sec)

mysql> use univdb
Database changed
mysql> show tables;
Empty set (0.01 sec)

mysql> _
```



❖ create table student (.....

```
C:\WINDOWS\system32\cmd.exe - mysql -u root

mysql> create table student (
-> id          varchar(20)      NOT NULL ,
-> passwd      varchar(20)      NOT NULL ,
-> name        varchar(20)      NOT NULL ,
-> year        int              NULL   ,
-> snum        varchar(10)      NULL   ,
-> depart      varchar(20)      NULL   ,
-> mobile1     char(3)          NULL   ,
-> mobile2     varchar(10)      NULL   ,
-> address     varchar(65)      NULL   ,
-> email       varchar(30)      NULL   ,
-> PRIMARY KEY ( id )
-> );

Query OK, 0 rows affected (0.20 sec)

mysql> show tables;
+-----+
| Tables_in_univdb |
+-----+
| student          |
+-----+
1 row in set (0.00 sec)

mysql> _
```

테이블 레코드(행) 삽입

- insert into student (id, passwd, name, year, snum, depart, mobile1, mobile2, address, email)
values ('javajsp', 'java8394', '김정수', 2010, '1077818', '컴퓨터공학과', '011', '7649-9875', '서울시', 'java2@gmail.com');

```
C:\WINDOWS\system32\cmd.exe - mysql -u root

mysql> insert into student (id, passwd, name, year, snum, depart, mobile1, mobile2, address, email)
-> values ('javajsp', 'java8394', '김정수', 2010, '1077818', '컴퓨터공학과', '011', '7649-9875', '서울시', 'java2@gmail.com');
Query OK, 1 row affected (0.08 sec)

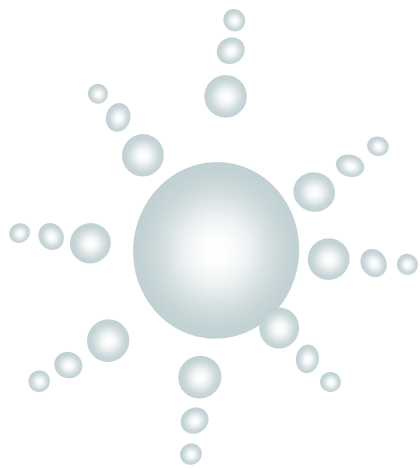
mysql> insert into student
-> values ('jdbcmnia', 'javajsp', '김수현', 2009, '2044187', '컴퓨터공학과', '011', '87654-4983', '인천시', 'java@hanmail.com');
Query OK, 1 row affected (0.03 sec)

mysql> select * from student;
```

id	passwd	name	year	snum	depart	mobile1	mobile2	address	email
javajsp	java8394	김정수	2010	1077818	컴퓨터공학과	011	7649-9875	서울시	java2@gmail.com
jdbcmnia	javajsp	김수현	2009	2044187	컴퓨터공학과	011	87654-4983	인천시	java@hanmail.com

```
2 rows in set (0.00 sec)

mysql>
```



Thank You !
www.dongyang.ac.kr